Remarks/Arguments

Election

In the Office Action dated October 1, 2003, the Patent Office found lack of unity of invention and required restriction between the following groups:

I Claims 1-11;

II: Claims 12,13;

III. Claims 14-20;

IV. Claims 21, 22, 25, 26;

V. Claims 23, 24, 27, 28;

VI. Claim 29;

VII. Claim 30;

VIII. Claim 31;

IX. Claim 32; and

X. Claim 33.

Applicants hereby elect the subject matter of Group V (claims 21, 22, 25, 26), with traverse with respect to Group X (claim 33).

Amendments to the Claims

This amendment cancels claim 32 that is neither elected nor traversed by Applicants. Applicants reserve the right to pursue the non-elected subject matter in a subsequent divisional application(s).

Claim 21, directed to polynucleotides of the ICAM2 isogenes, is amended to delete Applicants' reference ICAM2 isogene, isogene 3 and to reference the sequence to SEQ ID NO:59, which is annotated with the positions of the polymorphic sites. Support for this amendment is found at p. 22, last sentence of the next to last paragraph, and at p. 7 in the description of Figure 1.

Claim 26, directed to polynucleotide of ICAM2 coding sequences, is amended to clarify the number of variant coding sequences, and the variation associated with each variant coding sequence. Support for this amendment is found in Figures 1 and 2, and Tables 3 and 5.

Claim 29, directed to the polypeptide, is amended to recite the variant amino acids and their position in SEQ ID NO:3. Support for this chang is found in Tables 3 and 5 and Figures 1-

3.

Claim 33 is amended to direct the claim to collections of two or more ICAM2 isogenes, wherein at least one of the isogenes is not Applicants' reference isogene. Support for these changes is found in the specification at p., 23, second paragraph.

Traversal of restriction between Group V and Group X

The Office Action noted that the ICAM2 sequence was disclosed in the prior art and transgenic mice comprising a variant of the ICAM2 gene were made, thereby anticipating claims encompassing any variant fragment of ICAM2 and/or use thereof, citing Cowan et al. JBC (1998) 273:11737 and Genbank sequences AF212826 and AH00148. The references cited by the Office Action do not anticipate the sequences disclosed in the instant application. Genbank sequences AF212826 and AH00148 present short sequences comprising each of the exons of the ICAM2 gene. These sequences do not include as much surrounding intronic sequence of the ICAM2 gene as the reference sequence examined by Applicants, therefore the sequences cannot anticipate the ICAM2 variants disclosed herein. Similarly, Springer et al., cited in the International Search Report, discloses little more than an ICAM2 coding sequence and therefore does not anticipate the disclosure herein. Cowan et al. has made transgenic mice using only 330 bases of the human ICAM2 promoter. While Applicant has found polymorphisms in the 5' upstream region, Applicant has also discovered polymorphisms within exons and within introns. Further, Applicant has deduced the phasing of the alleles at the 12 polymorphisms in order to determine 14 human ICAM2 haplotypes. None of the references cited in the Office Action, or in the International Search Report or the International Preliminary Examination Report discloses genomic human ICAM2 haplotypes for this set of 12 polymorphic sites. Consequently, none of those references anticipate the disclosures herein.

Applicants respectfully request that Group X (claim 33), directed to a genome anthology ICAM2, be rejoined with elected Group V (claims 21, 22, 25, 26), directed to an isolated polynucleotide of a variant ICAM2 gene, or a polymorphic fragment thereof.

The Office Action has required restriction between the subject matter of these groups of claims that it states lack unity of invention. Applicants respectfully submit that the isolated polynucleotide of Group V and the genome anthology of Group X do in fact have unity of invention under the applicable rules.

The PCT permits the inclusion of a group of inventions in one application if all the inventions are "so linked as to form a single general inventive concept" (PCT Rule 13.1). This linkage, or unity, requirement is met "when there is a technical relationship among those inventions involving one or more of the same or *corresponding* special technical features" that "define a contribution which each of the claimed inventions, considered as a whole, makes over the prior art." (PCT Rule 13.2).

A technical relationship does exist among the inventions of Groups V and X linking these inventions into a single general inventive concept. The technical relationship among these inventions involves the novel human ICAM2 haplotypes in Table 5 identified by Applicants, which is the special technical feature making a contribution over the prior art that is common to the inventions of each of these groups. The claims of Group V are directed to polynucleotides, including ICAM2 isogenes, and polymorphic fragments of these isogenes. Claim 33 in Group X is also directed to nucleic acids, specifically to collections of at least two of the ICAM2 isogenes. The special technical features shared between the two groups of inventions are the novel ICAM2 haplotypes.

For the foregoing reasons, Applicants believe that reconsideration of the restriction requirement between Groups V and X is warranted.

Respectfully submitted,

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